

# CREB1 in Short- and Long-Term Facilitation

- Hourtchuladze, R., Frangulidze, B., Blensky, J., Gioffrè, D., Schutz, G., and Silva, A.J. (1994). Deficient long-term memory in mice with a targeted mutation of the cAMP-responsive element-binding protein. *Cell* 78, 59-68.
- Joshi, P.K., Hochner, B., and Kandel, E.R. (1990). Injection of the cAMP-responsive element into the nucleus of Aplysia sensory neurons blocks long-term facilitation. *Nature* 345, 718-721.
- Deisseroth, K., Ellis, M., and Tsien, R.W. (1998). Signaling from synapses to nucleus: postsynaptic CREB phosphorylation during multiple forms of hippocampal synaptic plasticity. *Neuron* 16, 89-101.
- Fiel, C.J., Williams, J.S., Chou, C.H., Wang, Q.M., Rouch, P.J., and Andriani, O.M. (1994). A secondary phosphorylation of CREB341 at Ser129 is required for the cAMP-mediated control of gene expression. A role for glycogen synthase kinase-3 in the control of gene expression. *J. Biol. Chem.* 269, 32187-32193.
- Foulkes, N.S., Bonnell, E., and Sassone-Corsi, P. (1991). CREM gene: use of alternative DNA-binding domains generates multiple antagonists of cAMP-induced transcription. *Cell* 64, 739-749.
- Galliot, B., Wolachof, M., Schuckert, O., Hoffmeister, S., and Schaller, H. (1993). The cAMP response element binding protein is involved in Hydra regeneration. *Dev. Suppl.* 127, 1205-1216.
- Gonzalez, B.A., Yamamoto, K.K., Fischer, W.H., Kay, D., Marzel, P., Blagg, W., and Vale, W.W. (1989). A cluster of phosphorylation sites on the cyclic AMP-regulated nuclear factor CREB predicted by its sequence. *Nature* 337, 749-752.
- Habener, J.F., Miller, C.P., and Vallejo, M. (1993). cAMP-dependent regulation of gene transcription by cAMP response element-binding protein and cAMP response element modulator. *Vitam. Horm.* 51, 1-67.
- Harlow, E., and Lane, D.P. (1988). *Antibodies*, First Edition (Cold Spring Harbor: Cold Spring Harbor Laboratory Press).
- Hermanson, O., Gustavsson, J., Stralfors, P., and Blomqvist, A. (1986). Cytoplasmic CREB alpha-like antigens in specific regions of the rat brain. *Biochem. Biophys. Res. Commun.* 135, 238-242.
- Huemer, E., Costa, T.J., Blensky, J.A., Garas, R., Aguzzi, A., Schmid, W., Beermann, F., and Schutz, G. (1994). Targeted mutation of the CREB gene: compensation within the CREB/ATF family of transcription factors. *Proc. Natl. Acad. Sci. USA* 91, 5847-5851.
- Kaang, B.K., Kandel, E.R., and Gint, S.G. (1983). Activation of cAMP-responsive genes by stimuli that produce long-term facilitation in Aplysia sensory neurons. *Neuron* 10, 427-435.
- Kozak, M. (1988a). Bifunctional messenger RNAs in eukaryotes. *Cell* 47, 481-483.
- Kozak, M. (1988b). Point mutations define a sequence flanking the AUG initiator codon that modulates translation by eukaryotic ribosomes. *Cell* 44, 283-292.
- Martin, K.C., Michael, D., Rose, J.C., Sarad, M., Casadio, A., Zhu, H., and Kandel, E.R. (1997). MAP kinase translocates into the nucleus of the presynaptic cell and is required for long-term facilitation in Aplysia. *Neuron* 18, 899-912.
- Molina, C.A., Foulkes, N.S., Lelli, E., and Sassone-Corsi, P. (1993). Inducibility and negative autoregulation of CREM: an alternative promoter directs the expression of ICER, an early response repressor. *Cell* 75, 875-886.
- Montarolo, P.G., Goebel, P., Castanucci, V.F., Morgan, J., Kandel, E.R., and Schacher, S. (1986). A critical period for macromolecular synthesis in long-term heterosynaptic facilitation in Aplysia. *Science* 234, 1249-1254.
- Nguyen, P.V., Abel, T., and Kandel, E.R. (1994). Requirement of a critical period of transcription for induction of a late phase of LTP. *Science* 265, 1104-1107.
- Nishiyama, M., Needer, E.J., and Duman, R.S. (1996). Chronic antidepressant administration increases the expression of cAMP response element binding protein (CREB) in rat hippocampus. *J. Neurosci.* 16, 2365-2372.
- Rappaport, S., Costa, T.J., Boshart, M., Schmidt, E., and Schutz, G. (1992). Multiple mRNA isoforms of the transcription activator protein CREB: generation by alternative splicing and specific expression in primary spermatocytes. *EMBO J.* 11, 1503-1512.
- Sun, P., Ersten, H., Myung, P.S., and Maurer, R.A. (1994). Differential activation of CREB by Ca<sup>2+</sup>/calmodulin-dependent protein kinase type II and type IV involves phosphorylation of a site that negatively regulates activity. *Genes Dev.* 8, 2527-2539.
- Waubser, G., Meyer, T.E., LeSauter, M., Hermann, M.L., Gerardi, N., and Habener, J.F. (1991). Developmental stage-specific expression of cyclic adenosine 3',5'-monophosphate response element-binding protein CREB during spermatogenesis involves alternative exon splicing. *Mol. Endocrinol.* 5, 1418-1430.
- Walter, W.H., Girardot, C., and Habener, J.F. (1996). Alternative exon splicing controls a translational switch from activator to repressor isoforms of transcription factor CREB during spermatogenesis. *J. Biol. Chem.* 271, 20145-20150.
- Widnell, K.L., Set, D.W., Lane, S.B., Russell, D.S., Vaidya, V.A., Miserendino, M.J., Rubin, C.S., Dunbar, R.S., and Nestler, E.J. (1998). Regulation of CREB expression in vivo: evidence for a functional role in morphine action in the nucleus accumbens. *J. Pharmacol. Exp. Ther.* 275, 308-316.
- Yin, J.C., Walach, J.S., Del Vecchio, M., Wilder, E.L., Zhou, H., Quinn, W.G., and Tully, T. (1994). Induction of a dominant negative CREB transgene specifically blocks long-term memory in Drosophila. *Cell* 79, 49-58.
- Yin, J.C., Del Vecchio, M., Zhou, H., and Tully, T. (1996a). CREB as a memory modulator: induced expression of a cCREB2 activator isoform enhances long-term memory in Drosophila. *Cell* 87, 107-115.
- Yin, J.C., Walach, J.S., Wilder, E.L., Kingensmith, J., Dang, O., Perrimon, N., Zhou, H., Tully, T., and Quinn, W.G. (1996b). A Drosophila CREB/CREM homolog encodes multiple isoforms, including a cyclic AMP-dependent protein kinase-responsive transcriptional activator and integrator. *Mol. Cell Biol.* 16, 5129-5138.